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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/569,555

04/27/2006

Martine Dubois

0512-1325

7642

466

7590

03/09/2009

YOUNG & THOMPSON

209 Madison Street

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ALEXANDRIA, VA 22314

EXAMINER

SHECHTMAN, SEAN P

ART UNIT

PAPER NUMBER

2121

MAIL DATE

DELIVERY MODE

03/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/569,555 | Applicant(s) DUBOIS ET AL. | |
| | Examiner Sean P. Shechtman | Art Unit 2121 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 44-86 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 44-57, drawn to a method for producing a three-dimensional multi-material component by the ink-jet-type printing of droplets of at least one material in successive layers, wherein it comprises at least the stages consisting of: cutting up a representation of the multi-material component into characteristic objects; slicing the representation of the component into print layers as a function of said characteristic objects; establishing a plurality of discrete spatial print path trajectories for each print layer; establishing a set of printing parameters as a function of the nature of the materials deposited and the deposition conditions thereof for each print layer and for each discrete spatial trajectory; establishing a spatial and temporal sequencing law for the print path for said print layers and for said discrete spatial trajectories as a function of the objects, their relative three-dimensional arrangement and the characteristics of the printer, in order to optimise the process of depositing each print layer.

Group II, claim(s) 58-79, drawn to a device for producing a multi-material component by the ink-jet-type printing of droplets of at least one material in successive layers, comprising: independent means for three-dimensional displacement in three reference directions; material droplet ejection means which are integral with the three-dimensional displacement means and are controlled in terms of temperature, pressure and size and shape of ejected droplets; means for storing and conditioning the materials, adapted to control the temperature, pressure and state of dispersion of the materials and connected to the ejection means; a data processing unit comprising: a module for computing and determining characteristic objects of a representation of said multi-material component to be produced and of successive print layers on the basis of said characteristic objects; a module for establishing, for each print layer, a plurality of discrete spatial print path trajectories and a spatial and temporal sequencing law for said print layers and said discrete spatial trajectories; a module for establishing a set of printing parameters for each layer and each discrete spatial trajectory; and a module for monitored control of said independent three-dimensional displacement means, said means for storing and conditioning the materials and said material droplet ejection means, in order to optimise production of the multi-material component. three-

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dimensional displacement measuring means and printing parameter measuring means, connected to the data processing unit; means for synchronising the three-dimensional displacement and ejection of materials as a function of the sequencing law.

Group III, claim(s) 80-82, drawn to a device for storing a material for a device for production by ink-jet-type printing, wherein it comprises, in the vicinity of a material outlet orifice: a system for delivery of this material, the opening of said delivery system being controlled, stirrer means, temperature control means and pressure control means for the stored material, in order to optimise the state of the material in the vicinity of the outlet orifice thereof.

Group IV, claim(s) 83-86, drawn to an ejection head for a material for a device for production by ink-jet-type printing, wherein it comprises a material tank (500), means (507, 508, 509, 510) for controlling the temperature of the material stored in said tank, means for controlling the pressure of the material in said tank and means for cleaning the discharge pipe for said material.

2. The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

the special technical feature of Group I is the method for producing a three-dimensional multi-material component by the ink-jet-type printing of droplets of at least one material in successive layers, wherein it comprises at least the stages consisting of: cutting up a representation of the multi-material component into characteristic objects; slicing the representation of the component into print layers as a function of said characteristic objects; establishing a plurality of discrete spatial print path trajectories for each print layer; establishing a set of printing parameters as a function of the nature of the materials deposited and the deposition conditions thereof for each print layer and for each discrete spatial trajectory; establishing a spatial and temporal sequencing law for the print path for said print layers and for said discrete spatial trajectories as a function of the objects, their relative three-dimensional arrangement and the characteristics of the printer, in order to optimise the process of depositing each print layer;

the special technical feature of Group II is the device for producing a multi-material component by the ink-jet-type printing of droplets of at least one material in successive layers, comprising: independent means for three-dimensional displacement in three reference directions; material droplet ejection means which are integral with the three-dimensional displacement means and are controlled in terms of temperature, pressure and size and shape of ejected droplets; means for storing and conditioning the materials, adapted to control the temperature, pressure and state of dispersion of the materials and connected to the ejection means; a data processing unit comprising: a module for computing and determining characteristic objects of a representation of said multi-material component to be produced and of successive print layers on the basis of said characteristic objects; a module for establishing, for each print layer, a plurality of discrete spatial print path trajectories and a spatial and temporal sequencing law for

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said print layers and said discrete spatial trajectories; a module for establishing a set of printing parameters for each layer and each discrete spatial trajectory; and a module for monitored control of said independent three-dimensional displacement means, said means for storing and conditioning the materials and said material droplet ejection means, in order to optimise production of the multi-material component. three-dimensional displacement measuring means and printing parameter measuring means, connected to the data processing unit; means for synchronising the three-dimensional displacement and ejection of materials as a function of the sequencing law;

the special technical feature of Group III is the device for storing a material for a device for production by ink-jet-type printing, wherein it comprises, in the vicinity of a material outlet orifice: a system for delivery of this material, the opening of said delivery system being controlled, stirrer means, temperature control means and pressure control means for the stored material, in order to optimise the state of the material in the vicinity of the outlet orifice thereof; and

the special technical feature of Group IV is the ejection head for a material for a device for production by ink-jet-type printing, wherein it comprises a material tank, means for controlling the temperature of the material stored in said tank, means for controlling the pressure of the material in said tank and means for cleaning the discharge pipe for said material.

Since none of the special technical features of Group I, Group II, Group III, or Group IV inventions is found in more than one of the inventions, unity of invention is lacking.

3. A telephone call was made to Thomas W. Perkins on 3/3/09 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

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4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571)272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SPS

Sean P. Shechtman

March 3, 2009

/Sean P. Shechtman/

Primary Examiner, Art Unit 2121